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THE BOOTS COMPANY PLC
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Patents ADP number *(if you know it)*

06859672002.

If the applicant is a corporate body, give the country/state of its incorporation

UNITED KINGDOM

4. Title of the invention

SKINCARE COMPOSITION

5. Name of your agent *(if you have one)*

DR M A THACKER

"Address for service" in the United Kingdom to which all correspondence should be sent *(including the postcode)*

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Patents ADP number *(if you know it)*

07736499001

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Country	Priority application number *(if you know it)*	Date of filing *(day / month / year)*

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Number of earlier application	Date of filing *(day / month / year)*

8. Is a statement of inventorship and of right to grant of a patent required in support of this request? *(Answer 'Yes' if:*

a) any applicant named in part 3 is not an inventor, or
b) there is an inventor who is not named as an applicant, or
c) any named applicant is a corporate body.
See note (d))

YES

SKINCARE COMPOSITION

The present invention relates to skincare compositions providing enhanced protection for the skin against free-radicals.

As we age, our skin undergoes changes such as becoming thinner, more easily damaged and less elastic. In addition, lifetime exposure to UVA and UVB radiation, together with other environmental pollution from traffic fumes, ozone, cigarette smoke etc, cause additional changes to the skin. These changes, such as lines and wrinkling, actinic lentigines, dyspigmentation, rough skin, actinic telangiectasia and further loss of skin elastic function are due to direct UV mediated damage to cells and indirectly mediated damage caused by the generation of free radicals in cells and tissues. This is generally termed photoageing and can account for up to 90% of the skin changes we associate with ageing.

Due to the major impact photoageing has on skin appearance and function, there has been much research conducted to develop technologies which can prevent the effects and help to repair existing damage.

To prevent sunlight mediated damage of skin cells and associated damage due to sunlight initiating the formation of free radicals in the skin, compositions containing a sunscreen may be used. These compositions generally contain an inorganic sunscreen such as titanium dioxide which reflects the suns rays, or one or more of an organic sunscreen which absorbs the rays. A further measure to protect the skin is to use compositions containing antioxidants which act as free radical quenchers. These react with the free radicals and so terminate the chain of reactions that free radicals customarily propogate which so damage the skin.

Compositions containing sunscreens are known. Some sunscreen formulations also contain antioxidants. There are also cosmetic compositions, not containing

sunscreens, which contain antioxidants for additional skin care and protection.

There are a number of skincare compositions, commercially available, which seek to minimise the damage to the skin by the inclusion of certain agents. In particular materials such as vitamins and herbal extracts have widely been known to reduce the formation of free-radicals. However to achieve good efficiency high levels of these materials have to be used and this can result in dark aesthetically unpleasing products.

The skincare compositions of the present invention have been shown to protect the skin more effectively from free radicals and are cosmetically and aesthetically more suitable than known skin care compositions. Therefore the skincare compositions of the present invention may be used to provide improved protection against damage to skin caused by exposure to factors such as sunlight, environmental and/or atmospheric pollution.

Therefore broadly according to the present invention there is provided a cosmetic composition suitable for application to the skin containing a combination of antioxidant ingredients that when combined together give a synergistic improvement in activity allowing improved protection to be provided for the skin without the drawback of aesthetically unpleasant product appearance.

The present invention provides cosmetic compositions suitable for application to the skin containing a synergistic mixture of two or more antioxidants in combination with a cosmetically acceptable diluent or carrier. Particularly preferred are cosmetic compositions containing a synergistic mixture of three antioxidants and a suitable diluent or carrier. The antioxidant agents used in the present invention are already known for their ability to quench free radicals and prevent oxidative damage to the skin. However the present invention discloses that certain combinations of these agents have an efficacy out of all proportion to that expected. This has been demonstrated by both *in vivo* and *in vitro*

testing.

Suitable antioxidant agents may include:

a) ascorbic acid its salts, esters, glucosides and glucosamines, particularly sodium ascorbyl phosphate, magnesium ascorbyl phosphate and ascorbyl palmitate

b) vitamin E (tocopherol) and its esters, particularly tocopheryl acetate

c) herbal extracts, particularly gingko biloba, such as that available under the trade name "Gingko Biloba Leaf Powder" from Univar PLC, morus alba, such as that available under the trade name "Mulberry Concentrate" from Aston Chemicals, origanum vulgare, such as that available under the trade name "Pronalen Origanum HSC" from S Black Ltd, panax ginseng, such as that available under the trade name "Ginseng 1.1 extract 4294" from S Black Ltd or "Phytexcell Ginseng available from Croda Chemicals Ltd, birch extract such as those available from Cosmetochem (U.K.) Ltd under the trade names "Super Herbasol Extract Birch" and "HP Herbasol Betula" and those available from Blagden Chemicals under the tradenames "Phytelene of Birch" and "Aqueous Spray Dried Birch", camellia sinensis, such as that available under the trade name "Herbal Extract Green Tea 75% Solids" from Nichimen Europe, rosmarrinus officinalis such as that available under the trade name "Pronalen Rosemary" from S.Black and Acerola cherry powder such as that available from Acerola PE from Gee Lawson.

The source of the antioxidant activity in some of these products is often not fully understood; for example, it is believed that the antioxidant activity of ginkgo biloba extract arises from the presence of flavonglycocides and/or terpenelactones which may be free-radical inhibitors. Birch extract may be produced by extracting the dried leaves of Betula alba with a suitable solvent. It is believed that the anti-free radical activity of birch extract arises due to the presence of flavonoids such as hyperosid, quencitrosid and/or myricetol-3-digalactosid which may be free-radical inhibitors. Such products are then often sold as mixtures or solutions.

Thus the antioxidant agent may consist of a number of active ingredients which are free-radical inhibitors or may also comprise suitable diluents and/or carriers (such as when the anti-free radical agent is some of the products mentioned herein). Thus there may be some confusion as to the actual level of agent within a commercially available product. Accordingly, the amounts of antioxidant agents used in the present invention are expressed as dry weights, as understood by a man skilled in the art.

The total amount of antioxidant agents present in the composition may range from 0.005% to 10% by weight. Where the synergistic mixture of antioxidant agents comprises solely of herbal extracts, then a preferred total amount of antioxidant agents is 0.005% to 1%w/w, most preferably 0.01% to 0.05% by weight of the composition.

Preferably, the individual antioxidant agents that comprise the synergistic mixtures may be present in an amount of from about 0.001% to about 10% by weight, more preferably from about 0.002% to about 5% by weight of the composition.

Particularly preferred synergistic combinations of antioxidant agents suitable for inclusion in a skin care composition are:

Origanum vulgare, sodium ascorbyl phosphate and one of morus alba or panax ginseng

Panax ginseng, morus alba, and one of magnesium ascorbyl phosphate, sodium ascorbyl phosphate or camellia sinensis.

Origanum vulgare, panax ginseng and one of rosmarinus officinalis or ascorbyl palmitate.

Origanum vulgare, morus alba and one of rosmarrinus officinalis or magnesium ascorbyl phosphate.

Camellia sinensis, magnesium ascorbyl phosphate and panax ginseng.

Tocopheryl acetate, gingko biloba and one of panax ginseng or morus alba.

Suitable cosmetic compositions include colour cosmetics such as lipsticks, foundation, lip balm, face cream, toner cleanse, aftersun, moisturiser, face masks and nail treatments. Suitable formulation types include gels, creams, serums, pastes, lotions, milks, ointments, salves, sticks, spray, roll-on, powder, solution, suspension dispersion and emulsions, be they w/o, o/w, w/o/w and o/w/o.

A particularly preferred cosmetic composition is a sunscreen.

The sunscreen may contain inorganic or inorganic sun filters or a combination of the two. Suitable inorganic sunfilters include:

a) Microfine titanium dioxide
b) Microfine zinc oxide
c) Boron nitride

Suitable organic sunscreens include

a) p -aminobenzoic acids, their esters and derivatives (for example, 2-ethylhexyl p -dimethylaminobenzoate),

b) methoxycinnamate esters (for example, 2-ethylhexyl p -methoxycinnamate, 2-ethoxyethyl p -methoxycinnamate or α,β-di-(p-methoxycinnamoyl)-α'-(2-ethylhexanoyl)-glycerin,

c) benzophenones (for example oxybenzone),

d) dibenzoylmethanes and

e) salicylate esters.

Any sunscreening agent is present in an amount from 0.1 to 10% by weight of the composition.

Sunscreen composition maybe formulated as any suitable form, as known to a man skilled in the art. Particularly preferred formulation types are emulsions and oily dispersionss.

A skin care composition containing a synergistic combination of antioxidant agents has a multitude of advantages. Such antioxidant agents are usually highly coloured. If they are used in amounts necessary to be totally effective, it is likely that the agents would give the composition a cosmetically unacceptable appearance. Thus most conventional skin care compositions use less of an antioxidant agent than necessary to provide total protection. With the present invention because of the increased efficacy of the synergistic mixture of antioxidant agents it is possible to include the antioxidant agents in sufficient amounts to provide an effective defence against the action of free radicals. Thus use of the composition will give the users skin improved protection from damage. All this is provided without the aforementioned disadvantage of unacceptable cosmetic appearance.

Alternatively, if the same level of protection as a conventional formulation is required, then the increased efficacy of the synergistic mixture of antioxidant agents means that the composition will require much lower quantities of the antioxidant agents than a conventional formulation. Not only are any problems with highly coloured formulations reduced (cosmetic appearance), but the cost of the formulation is likely to be cheaper as well.

Further components may be added to the skin care composition as is well-known to those skilled in the art.

Suitable oils for the oil phase of the oily dispersions and the oil phase of the water-in-oil and oil-in-water emulsions of the present invention may comprise for example:

a) hydrocarbon oils such as paraffin or mineral oils;
b) waxes such as beeswax or paraffin wax;
c) natural oils such as sunflower oil, apricot kernel oil, shea butter or jojoba oil;
d) silicone oils such as dimethicone, cyclomethicone or cetyldimethicone;
e) fatty acid esters such as isopropyl palmitate or isopropyl myristate;
f) fatty alcohols such as cetyl alcohol or stearyl alcohol; or
g) mixtures thereof, for example, the blend of waxes available commercially

under the trade name Cutina (Henkel).

The emulsifiers used may be any emulsifiers known in the art for use in water-in-oil or oil-in-water emulsions. It has been found that particularly effective water-in-oil and oil-in-water sunscreen compositions can be prepared by using an emulsifier or mixture of emulsifiers selected from known cosmetically acceptable emulsifiers which include:

a) sesquioleates such as sorbitan sesquioleate, available commercially for example under the trade name Arlacel 83 (ICI), or polyglyceryl-2-sesquioleate;

b) ethoxylated esters of derivatives of natural oils such as the polyethoxylated ester of hydrogenated castor oil available commercially for example under the trade name Arlacel 989 (ICI);

c) silicone emulsifiers such as silicone polyols available commercially for example under the trade name ABIL WS08 (Th. Goldschmidt AG);

d) anionic emulsifiers such as fatty acid soaps e.g. potassium stearate and fatty acid sulphates e.g. sodium cetostearyl sulphate available commercially under the trade name Dehydag (Henkel);

e) ethoxylated fatty alcohols, for example the emulsifiers available commercially under the trade name Brij (ICI);

f) sorbitan esters, for example the emulsifiers available commercially under the trade name Span (ICI);

g) ethoxylated sorbitan esters, for example the emulsifiers available commercially under the trade name Tween (ICI);

h) ethoxylated fatty acid esters such as ethoxylated stearates, for example the emulsifiers available commercially under the trade name Myrj (ICI);

i) ethoxylated mono-, di-, and tri-glycerides, for example the emulsifiers available commercially under the trade name Labrafil (Alfa Chem.);

j) non-ionic self-emulsifying waxes, for example the wax available commercially under the trade name Polawax(Croda);

k) ethoxylated fatty acids, for example, the emulsifiers available commercially under the trade name Tefose (Alfa Chem.); or

l) mixtures thereof.

For example, preservatives may be added to the composition such as 2-bromo-2-nitropropane-1,3-diol (bronopol, which is available commercially under the trade name Myacide RTM), benzyl alcohol, diazolidinyl urea, imidazolidinyl urea, methyl paraben, phenoxy ethanol, propyl paraben, sodium methyl paraben, sodium dehydroacetate, polyhexamethylenebiguanide hydrochloride, isothiazolone and sodium propyl paraben, suitably in an amount of from about 0.01% to about 10% by weight of the composition.

Thickeners, viscosity modifying agents and/or gelling agents may be added to the composition, such as acrylic acid polymers e.g. available commercially under the trade name Carbopol (B.F. Goodrich) or modified celluloses e.g. hydroxyethylcellulose available commercially under the trade name Natrosol (Hercules) or hydroxypropylmethyl cellulose, amine oxides, block polymers of ethylene oxide and propylene oxide (for example, those available from BASF Wyandotte under the trade name "Pluronic" RTM), PVM, MA, or a decadiene crosspolymer (available under the trade name Stabilez 60), ethoxylated fatty alcohols, salt (NaCl), phthalic acid amide, polyvinyl alcohols, fatty alcohols and alkyl galactmanans available under the trade name N-Hance from Hercules, suitably in an amount of from about 0.5% to about 10% by weight of the composition.

Sequestering agents may be added to the composition, such as ethylenediamine tetraacetic acid and salts thereof, suitably in an amount of from about 0.005% to about 0.5% by weight of the composition.

The composition may also include vitamins such as biotin, suitably in an amount of from about 0.01% to about 1.0% by weight of the composition.

The composition may also include waxes such as cocoa butter suitably in an amount of from about 1% to about 99% by weight of the composition.

The composition may also comprise suitable, cosmetically acceptable diluents, carriers and/or propellants such as dimethyl ether.

The composition may also include pearlising agents such as stearic monoethanolamide, suitably in an amount of from about 0.01% to about 10% by weight of the composition.

Perfumes may be added suitably in an amount of from about 0.01% to about 2% by weight of the composition, as may water soluble dyes such as tartrazine, suitably in an amount of from about a trace amount (such as 1×10^{-5} %) to about 0.1% by weight of the composition.

The composition may also include pH adjusting agents such as sodium hydroxide, aminomethyl propanol, triethanolamine, suitably in an amount of from about 0.01% to about 10% by weight of the composition.
The composition may be buffered by means well known in the art, for example by use of buffer systems comprising succinic acid, citric acid, lactic acid, and acceptable salts thereof, phosphoric acid, mono- or disodium phosphate and sodium carbonate. Suitably, the composition may have a pH between about 3 and about 10, preferably between about 4 and about 8.

The compositions of the present invention may additionally comprise other components which will be well known to those skilled in the art. These include, for example, emolients such as isopropyl myristate or triglycerides of fatty acids e.g. lauric triglyceride or capric/caprylic triglyceride, such as the triglyceride available commercially under the trade name Migliol 810 (Huls UK); moisturisers such as D-panthenol; humectants such as glycerin or 1,3-butylene glycol; antioxidants such as DL-α-tocopherylacetate or butylated hydroxytoluene; emulsion stabilising salts such as sodium chloride, sodium citrate or magnesium sulphate; film formers to assist spreading on the surface of the skin such as alkylated polyvinylpyrrolidone e.g. available commercially under the trade name Antaron (GAF) and colourings.

Broadly in accordance with a further aspect of the present invention there is provided a method of preparing a skin care composition. Optionally any other suitable ingredients may be added such as those described herein. Preferred methods of preparation are described in the examples.

The invention will be understood with reference to the non-limiting tests and formulation examples described hereinafter:

Example 1 – Aftersun Treatment lotion

	%w/w
Aqua	to 100
Hydrated silica	5
Isopropyl palmitate	4
Arachidyl propionate	2
Dimethicone	2
Glycerin	2
Steareth-21	1.96
Steareth-2	1.683
Cetyl alcohol	1
Tribehenin	1
Glyceryl stearate	1
Paraffinum liquidum	0.994
Panthenol	0.75
Parfum	0.3
Xanthan gum	0.3
Sodium citrate	0.25
Tocopheryl acetate	0.2
Hydroxyethylcellulose	0.1
Bisabolol	0.095

Citric acid	0.05
Preservative	q.s
Sodium ascorbyl phosphate	0.15
Morus alba	0.0023
Ginseng	0.03

Method

Stage 1

The Citric acid, Sodium citrate and Hydroxyethylcellulose were added to the water. Using a prop. Stirrer, the mixture was stirred until dispersed. The Xanthan gum was pre-dispersed in the Glycerin and this was then added to the bulk, which was then heated to 70^{0}C.

Stage 2

The Isopropyl palmitate, Arachidyl propionate, Dimethicone, Steareth-21, Steareth-2, Cetyl alcohol, Tribehenin , Glyceryl stearate, Paraffinum liquidum were mixed and heated to 70^{0}C to melt the waxes.

Stage 3

Using a homogeniser, stage 2 was added to stage 3 and was mixed until emulsified and uniform. The emulsion was cooled to below 35^0 C using stirring. Once below 35^{0}C, the remaining materials were added, including the antioxidant complex. The product was made to weight using purified water, and mixed until uniform.

Example 2 – Aftersun Treatment lotion

	%w/w
Aqua	to 100
Hydrated silica	5
Isopropyl palmitate	4
Arachidyl propionate	2
Dimethicone	2
Glycerin	2

Steareth-21	1.96
Steareth-2	1.683
Cetyl alcohol	1
Tribehenin	1
Glyceryl stearate	1
Paraffinum liquidum	0.994
Panthenol	0.75
Parfum	0.3
Xanthan gum	0.3
Sodium citrate	0.25
Tocopheryl acetate	0.2
Hydroxyethylcellulose	0.1
Bisabolol	0.095
Citric acid	0.05
Preservative	q.s
Magnesium ascorbyl phosphate	0.15
Morus alba	0.0023
Ginseng	0.03

Method

Stage 1

The Citric acid, Sodium citrate and Hydroxyethylcellulose were added to the water. Using a prop. Stirrer, the mixture was stirred until dispersed. The Xanthan gum was pre-dispersed in the Glycerin and this was then added to the bulk, which was then heated to 70^0C.

Stage 2

The Isopropyl palmitate, Arachidyl propionate, Dimethicone, Steareth-21, Steareth-2, Cetyl alcohol, Tribehenin , Glyceryl stearate, Paraffinum liquidum were mixed and heated to 70^0C to melt the waxes.

Stage 3

Using a homogeniser, stage 2 was added to stage 3 and was mixed until emulsified and uniform. The emulsion was cooled to below 35^0 C using stirring.

Once below 35°C, the remaining materials were added, including the antioxidant complex. The product was made to weight using purified water, and mixed until uniform.

Example 3 – Anti-ageing Day Cream

	%w/w
Aqua	to 100
Butylene glycol	5
Dicaprylyl maleate	4
Paraffinum liquidum	4
Octyl methoxycinnamate	3
Petrolatum	3
Cetyl Alcohol	2
Glycerin	2
Dimethicone	2
Cetearyl alcohol	1.6
Butyl methoxydibenzoylmethane	1
Hydroxyethylcellulose	0.4
PEG-20 stearate	0.4
Polyacrylamide	0.4
Parfum	0.3
C13-14 isoparaffin	0.215
Retinyl palmitate	0.1782
Tetrasodium EDTA	0.1
Citric acid	0.08
Laureth-7	0.055
BHT	0.0024
Sodium ascorbyl phosphate	1.5
Morus alba	0.023
Ginseng	0.03
Preservative	q.s

Method

Stage 1

Tetrasodium EDTA and Citric acid were added to the water using a prop. Stirrer. The hydroxyethylcellulose was added and dispersed using a homogeniser. Butylene glycol, Glycerin and Methylparaben were added and the bulk was heated to 70°C.

Stage 2

The Dicaprylyl maleate, Paraffinum liquidum, Octyl methoxycinnamate, Petrolatum, Cetyl Alcohol, Dimethicone, Cetearyl alcohol, Butyl methoxydibenzoylmethane, PEG-20 stearate, C13-14 isoparaffin, Laureth-7 and BHT were mixed and heated to 70°C to melt the waxes.

Stage 3

Using a homogeniser, stage 1 was added to stage 2 and the bulk was mixed until emulsified and stable. The product was then cooled to below 35°C using stirring. The remaining raw materials, including the antioxidant complex were added and the product was mixed using a prop. Stirrer until uniform. The product was made to weight using purified water.

Example 4 – Anti-ageing Day Cream

	%w/w
Aqua	to 100
Butylene glycol	5
Dicaprylyl maleate	4
Paraffinum liquidum	4
Octyl methoxycinnamate	3
Petrolatum	3
Cetyl Alcohol	2
Glycerin	2
Dimethicone	2
Cetearyl alcohol	1.6

Butyl methoxydibenzoylmethane	1
Hydroxyethylcellulose	0.4
PEG-20 stearate	0.4
Polyacrylamide	0.4
Parfum	0.3
C13-14 isoparaffin	0.215
Retinyl palmitate	0.1782
Tetrasodium EDTA	0.1
Citric acid	0.08
Laureth-7	0.055
BHT	0.0024
Magnesium ascorbyl phosphate	1.5
Morus alba	0.023
Ginseng	0.03
Preservative	q.s

Method

Stage 1

Tetrasodium EDTA and Citric acid were added to the water using a prop. Stirrer. The hydroxyethylcellulose was added and dispersed using a homogeniser. Butylene glycol, Glycerin and Methylparaben were added and the bulk was heated to 70^{0}C.

Stage 2

The Dicaprylyl maleate, Paraffinum liquidum, Octyl methoxycinnamate, Petrolatum, Cetyl Alcohol, Dimethicone, Cetearyl alcohol, Butyl methoxydibenzoylmethane, PEG-20 stearate, C13-14 isoparaffin, Laureth-7 and BHT were mixed and heated to 70^{0}C to melt the waxes.

Stage 3

Using a homogeniser, stage 1 was added to stage 2 and the bulk was mixed until emulsified and stable. The product was then cooled to below 35^{0}C using stirring. The remaining raw materials, including the antioxidant complex were added and the product was mixed using a prop. Stirrer until uniform. The

product was made to weight using purified water.

Example 5 – Sun Protection Lotion SPF8

	%w/w
Aqua	to 100
C12-15 Alkyl Benzoate	8
Butylene glycol	5
Butyl methoxydibenzoylmethane	2.2
Dimethicone	2
Polyglyceryl-3 methylglucose distearate	2
PVP/hexadecene copolymer	1.75
Octyl methoxycinnamate	1.7
Theobroma cacao	0.5
Parfum	0.5
Tocopheryl acetate	0.2
Acrylates/vinyl isodecanoate crosspolymer	0.15
Potassium hydroxide	0.034
Tetrasodium EDTA	0.02
Preservative	q.s
Sodium ascorbyl phosphate	0.15
Morus alba	0.0023
Ginseng	0.003

Method

Stage 1

The EDTA was dispersed into the water. Using a prop. Stirrer, the Acrylates/vinyl isodecanoate crosspolymer and PVP/hexadecene copolymer were added and dispersed and hydrated. Butylene glycol was added and the aqueous phase was heated to 70^0C

Stage 2

The C12-15 Alkyl Benzoate, Butyl methoxydibenzoylmethane, Dimethicone,

Polyglyceryl-3 methylglucose distearate, PVP/hexadecene copolymer, Octyl methoxycinnamate, Theobroma cacao and Tocopheryl acetate were mixed and heated to 70°C to melt the waxes.

Stage 3

Using a homogeniser, stage 2 was added to stage 1 and the bulk was mixed until emulsified and uniform. The emulsion was cooled to below 35°C with stirring. The remaining materials, including the antioxidant complex were added and mixed. The product was made to weight using purified water and stirred until uniform.

Example 6 – Sun Protection Lotion SPF8

	%w/w
Aqua	to 100
C12-15 Alkyl Benzoate	8
Butylene glycol	5
Butyl methoxydibenzoylmethane	2.2
Dimethicone	2
Polyglyceryl-3 methylglucose distearate	2
PVP/hexadecene copolymer	1.75
Octyl methoxycinnamate	1.7
Theobroma cacao	0.5
Parfum	0.5
Tocopheryl acetate	0.2
Acrylates/vinyl isodecanoate crosspolymer	0.15
Potassium hydroxide	0.034
Tetrasodium EDTA	0.02
Preservative	q.s
Magnesium ascorbyl phosphate	0.15
Morus alba	0.0023
Ginseng	0.003

Method

Stage 1

The EDTA was dispersed into the water. Using a prop. Stirrer, the Acrylates/vinyl isodecanoate crosspolymer and PVP/hexadecene copolymer were added and dispersed and hydrated. Butylene glycol was added and the aqueous phase was heated to 70^{0}C

Stage 2

The C12-15 Alkyl Benzoate, Butyl methoxydibenzoylmethane, Dimethicone, Polyglyceryl-3 methylglucose distearate, PVP/hexadecene copolymer, Octyl methoxycinnamate, Theobroma cacao and Tocopheryl acetate were mixed and heated to 70^{0}C to melt the waxes.

Stage 3

Using a homogeniser, stage 2 was added to stage 1 and the bulk was mixed until emulsified and uniform. The emulsion was cooled to below 35^{0}C with stirring. The remaining materials, including the antioxidant complex were added and mixed. The product was made to weight using purified water and stirred until uniform.

Example 7 – Aftersun Treatment

	%w/w
Aqua	to 100
Petrolatum	3
Cetyl Alcohol	2
Dimethicone	2
Glycerin	2
Ceteath-20	1.7
Paraffinum Liquidum	1
Sodium chloride	0.8
Theobroma cacao	0.7
Glyceryl stearate	0.5
Parfum	0.3

Allantoin	0.2
Hydroxyethylcellulose	0.1
Triclosan	0.1
Citric acid	0.02
Preservative	q.s
Sodium ascorbyl phosphate	0.15
Morus alba	0.0023
Ginseng	0.003

Method

Stage 1

Into the water, Sodium chloride and Citric acid were added and dispersed. Using a prop. Stirrer, Hydroxyethylcellulose was added and dispersed. This phase was then heated to 70^{0}C.

Stage 2

The Petrolatum, Cetyl Alcohol, Dimethicone, Ceteath-20, Paraffinum Liquidum, Theobroma cacao and Glyceryl stearate were mixed and heated to 70^{0}C to melt the waxes.

Stage 3

Using a homogeniser, stage 2 was added to stage 1, this was mixed until emulsified and uniform. The emulsion was then cooled to below 35^{0}C with stirring. The remaining materials, including the antioxidant complex were then added and mixed. The product was made to weight using purified water and stirred until uniform.

Example 8 – Aftersun Treatment

	%w/w
Aqua	to 100
Petrolatum	3
Cetyl Alcohol	2
Dimethicone	2

Glycerin	2
Ceteath-20	1.7
Paraffinum Liquidum	1
Sodium chloride	0.8
Theobroma cacao	0.7
Glyceryl stearate	0.5
Parfum	0.3
Allantoin	0.2
Hydroxyethylcellulose	0.1
Triclosan	0.1
Citric acid	0.02
Preservative	q.s
Magnesium ascorbyl phosphate	0.15
Morus alba	0.0023
Ginseng	0.003

Method

Stage 1

Into the water, Sodium chloride and Citric acid were added and dispersed. Using a prop. Stirrer, Hydroxyethylcellulose was added and dispersed. This phase was then heated to 70^{0}C.

Stage 2

The Petrolatum, Cetyl Alcohol, Dimethicone, Ceteath-20, Paraffinum Liquidum, Theobroma cacao and Glyceryl stearate were mixed and heated to 70^{0}C to melt the waxes.

Stage 3

Using a homogeniser, stage 2 was added to stage 1, this was mixed until emulsified and uniform. The emulsion was then cooled to below 35^{0}C with stirring. The remaining materials, including the antioxidant complex were then added and mixed. The product was made to weight using purified water and stirred until uniform.

Example 9 – Eye Contour Treatment Cream

	%w/w
Aqua	to 100
Butylene glycol	6
Paraffinum liquidum	5
Octyl methoxycinnamate	4
Dimethicone	2
Petrolutum	2
Cetearyl octanoate	1.8
Cetearyl alcohol	1.6
Glyceryl stearate	1.5
Cetyl alcohol	1
Prunus dulcis	1
Glycerin	0.57
Hydrogenated vegetable glycerides citrate	0.5
Tocopheryl acetate	0.5
Bisabolol	0.475
Panthenol	0.45
Sodium phosphate	0.42
PEG-20 stearate	0.4
Isopropyl myristate	0.2
Carbomer	0.15
PEG-12 isostearate	0.125
Allantoin	0.1
Tetrasodium EDTA	0.1
Lactic acid	0.088
Disodium phophate	0.083
Potassium hydroxide	0.051
Sodium ascorbyl phosphate	1.5
Morus alba	0.023

Ginseng	0.03
Preservative	q.s

Method

Stage 1

Into the water, Citric acid, EDTA, Sodium phosphate, Disodium phosphate and Lactic acid were added and dispersed. Using a homogeniser, Carbomer was added and hydrated. The aqueous phase was then heated to 70^{0}C.

Stage 2

The Paraffinum liquidum, Octyl methoxycinnamate, Dimethicone, Petrolatum, Cetearyl octanoate, Cetearyl alcohol, Glyceryl stearate, Cetyl alcohol, Hydrogenated vegetable glycerides citrate, Tocopheryl acetate, PEG-20 stearate, Isopropyl myristate and PEG-12 isostearate were mixed and heated to 70^{0}C to melt the waxes.

Stage 3

Using a homogeniser, stage 2 was added to stage 1 and this was mixed until emulsified and uniform. The emulsion was then cooled to below 35^{0}C using stirring. The remaining materials, including the antioxidant complex were then added and mixed. The product was then made to weight using purified water and was stirred until uniform.

Example 10 – Eye Contour Treatment Cream

	%w/w
Aqua	to 100
Butylene glycol	6
Paraffinum liquidum	5
Octyl methoxycinnamate	4
Dimethicone	2
Petrolutum	2
Cetearyl octanoate	1.8

Cetearyl alcohol	1.6
Glyceryl stearate	1.5
Cetyl alcohol	1
Prunus dulcis	1
Glycerin	0.57
Hydrogenated vegetable glycerides citrate	0.5
Tocopheryl acetate	0.5
Bisabolol	0.475
Panthenol	0.45
Sodium phosphate	0.42
PEG-20 stearate	0.4
Isopropyl myristate	0.2
Carbomer	0.15
PEG-12 isostearate	0.125
Allantoin	0.1
Tetrasodium EDTA	0.1
Lactic acid	0.088
Disodium phophate	0.083
Potassium hydroxide	0.051
Magnesium ascorbyl phosphate	1.5
Morus alba	0.023
Ginseng	0.03
Preservative	q.s

Method

Stage 1

Into the water, Citric acid, EDTA, Sodium phosphate, Disodium phosphate and Lactic acid were added and dispersed. Using a homogeniser, Carbomer was added and hydrated. The aqueous phase was then heated to 70^0C.

Stage 2

The Paraffinum liquidum, Octyl methoxycinnamate, Dimethicone, Petrolatum,

Cetearyl octanoate, Cetearyl alcohol, Glyceryl stearate, Cetyl alcohol, Hydrogenated vegetable glycerides citrate, Tocopheryl acetate, PEG-20 stearate, Isopropyl myristate and PEG-12 isostearate were mixed and heated to 70^0C to melt the waxes.

Stage 3

Using a homogeniser, stage 2 was added to stage 1 and this was mixed until emulsified and uniform. The emulsion was then cooled to below 35^0C using stirring. The remaining materials, including the antioxidant complex were then added and mixed. The product was then made to weight using purified water and was stirred until uniform.

Example 11 – Skin Refreshing cream

	%w/w
Aqua	to 100
Butylene glycol	7.5
Silica	7.2
Arabinogalactan	5.35
Dimethicone	5.35
Petrolatum	5.35
Hydrated silica	3.75
Steareth-2	2.7
Prunus dulcis	2.7
Steareth-21	0.9
PVP/hexadecene copolymer	0.8
Carbomer	0.32
Sodium PCA	0.2
Parfum	0.2
Hydroxyethylcellulose	0.16
Potassium hydroxide	0.1
Propylene glycol	0.1
Magnesium ascorbyl phosphate	1.5

Morus alba	0.1
Ginseng	0.1
Preservative	q.s

Method

Stage 1

Into the water, the Carbomer was added and hydrated using a homogeniser. The PVP/hexadecene copolymer was then added and hydrated using a prop. Stirrer. The aqueous phase was then heated to 70°C.

Stage 2

The Silica, Arabinogalactan, Dimethicone, Petrolatum, Hydrated silica, Steareth-2 and Steareth-21 were mixed and heated to 70°C to melt the waxes.

Stage 3

Using a homogeniser, stage 2 was added to stage 1 and this was mixed until emulsified and uniform. The emulsion was then cooled to below 35°C using stirring. The remaining materials, including the antioxidant complex were then added and mixed. The product was then made to weight using purified water and was stirred until uniform.

Example 12 – Daily Skin Protection Lotion

	%w/w
Aqua	to 100
Dimethicone	5
Glycerin	3
Kaolin	3
Dicaprylyl maleate	2.5
Isopropyl myristate	2.5

Stearate-2	2
Octyl methoxycinnamate	1
Steareth-21	1
Cetyl alcohol	0.75
Butyl methoxydibenzoylmethane	0.5
Propylene glycol	0.5
Hydroxyethylcellulose	0.4
Xanthan gum	0.24
Serica	0.1
Sodium C8-16 isoalkylsuccinyl lactoglobulin sulfonate	0.1
Tetrasodium EDTA	0.1
Citric acid	0.05
Magnesium ascorbyl phosphate	1.5
Morus alba	0.1
Ginseng	0.1
Preservative	q.s

Method

Stage 1

Into the water, the Citric acid and EDTA were added and dispersed. The hydroxyethylcellulose was added and hydrated using a prop. Stirrer. Xanthan gum was pre-dispersed in Glycerin and added to the bulk. This was stirred until uniform. The aqueous phase was then heated to 70^{0}C.

Stage 2

The Dimethicone, Dicaprylyl maleate, Isopropyl myristate, Stearate-2 , Octyl methoxycinnamate, Steareth-21, Cetyl alcohol and Butyl methoxydibenzoylmethane were mixed and heated to 70 ^{0}C to melt the waxes.

Stage 6

Using a homogeniser, stage 2 was added to stage 1 and this was mixed until emulsified and uniform. The emulsion was then cooled to below 35^{0}C using stirring. The remaining materials, including the antioxidant complex were then added and mixed. The product was then made to weight using purified water

and was stirred until uniform.

Example 13 – anti-ageing Night Cream

	%w/w
Aqua	to 100
Glycerin	5
Paraffinum liquidum	4.5
Dicaprylyl maleate	3
Dimethicone	3
Petrolatum	3
Paraffin	2.9
Cetyl alcohol	2
Steareth-2	2
Glyceryl stearate	1.5
Butyrospermum parkii	1.5
Steareth-21	1
Mannitol	1
Cera microcristallina	0.262
Buxus chinensis	0.5
Propylene glycol	0.48
Parfum	0.4
Borago officinalis	0.3
Hydroxyethylcellulose	0.3
Lactis proteinum	0.3
Xanthan gum	0.25
Alcohol denat.	0.08
Sodium citrate	0.08
Lecithin	0.075
BHT	0.05
Faex	0.04
Phospholipids	0.03

Citric acid	0.025
Magnesium ascorbyl phosphate	1.5
Morus alba	0.1
Ginseng	0.1
Preservative	q.s

Method

Stage 1

Into the water, the Citric acid and Sodium citrate were added and dispersed. The hydroxyethylcellulose was added and hydrated using a prop. Stirrer. Xanthan gum was pre-dispersed in Glycerin and added to the bulk. This was stirred until uniform. The aqueous phase was then heated to 70^{0}C.

Stage 2

The Paraffinum liquidum, Dicaprylyl maleate, Dimethicone, Petrolatum, Paraffin, Cetyl alcohol, Steareth-2 , Glyceryl stearate, Steareth-21, Cera microcristallina and BHT were mixed and heated to 70^{0}C to melt the waxes.

Stage 3

Using a homogeniser, stage 2 was added to stage 1 and this was mixed until emulsified and uniform. The emulsion was then cooled to below 35^{0}C using stirring. The remaining materials, including the antioxidant complex were then added and mixed. The product was then made to weight using purified water and was stirred until uniform.

Example 14 – Sun protection Lotion for Sensitive Skin – SPF15

	%w/w
Aqua	to 100
C12-15 alkyl benzoate	12
Butylene glycol	5
Octyl methoxycinnamate	3.8
Butyl methoxydibenzoylmethane	3

Dimethicone	2
Polyglyceryl-3 methylglucose distearate	2
PVP/hexadecene copolymer	1.75
C18-36 acid glycol ester	1.5
Polysorbate 60	0.5
Titanium dioxide	0.3
Tocopheryl acetate	0.2
Acrylates/vinyl isodecanoate crosspolymer	0.14
Potassium hydroxide	0.035
Tetrasodium EDTA	0.02
Preservative	q.s
Sodium ascorbyl phosphate	0.15
Morus alba	0.0023
Ginseng	0.003

Method

Stage 1

Into the water, Citric acid was added and dispersed. The PVP/hexadecene copolymer and Acrlyates/vinyl isodecanoate crosspolymer were added and dispersed using a prop. Stirrer. The aqueous phase was then heated to 70^{0}C.

Stage 2

The C12-15 alkyl benzoate, Octyl methoxycinnamate, Butyl methoxydibenzoylmethane, Dimethicone, Polyglyceryl-3 methylglucose distearate, C18-36 acid glycol ester, Polysorbate 60, Titanium dioxide and Tocopheryl acetate were mixed and heated to 70^{0}C to melt the waxes.

Stage 3

Using a homogeniser, stage 2 was added to stage 1 and this was mixed until emulsified and uniform. The emulsion was then cooled to below 35^{0}C using stirring. The remaining materials, including the antioxidant complex were then added and mixed. The product was then made to weight using purified water and was stirred until uniform.

Example 15 – Sun protection Lotion for Sensitive Skin – SPF15

	%w/w
Aqua	to 100
C12-15 alkyl benzoate	12
Butylene glycol	5
Octyl methoxycinnamate	3.8
Butyl methoxydibenzoylmethane	3
Dimethicone	2
Polyglyceryl-3 methylglucose distearate	2
PVP/hexadecene copolymer	1.75
C18-36 acid glycol ester	1.5
Polysorbate 60	0.5
Titanium dioxide	0.3
Tocopheryl acetate	0.2
Acrylates/vinyl isodecanoate crosspolymer	0.14
Potassium hydroxide	0.035
Tetrasodium EDTA	0.02
Preservative	q.s
Magnesium ascorbyl phosphate	0.15
Morus alba	0.0023
Ginseng	0.003

Method

Stage 1

Into the water, Citric acid was added and dispersed. The PVP/hexadecene copolymer and Acrlyates/vinyl isodecanoate crosspolymer were added and dispersed using a prop. Stirrer. The aqueous phase was then heated to 70^{0}C.

Stage 2

The C12-15 alkyl benzoate, Octyl methoxycinnamate, Butyl methoxydibenzoylmethane, Dimethicone, Polyglyceryl-3 methylglucose distearate, C18-36 acid glycol ester, Polysorbate 60, Titanium dioxide and Tocopheryl acetate were mixed and heated to 70^{0}C to melt the waxes.

Stage 3

Using a homogeniser, stage 2 was added to stage 1 and this was mixed until emulsified and uniform. The emulsion was then cooled to below 35^{0}C using stirring. The remaining materials, including the antioxidant complex were then added and mixed. The product was then made to weight using purified water and was stirred until uniform.

Example 16 – Sun Protection Cream For Sensitive Skin

	%w/w
Aqua	to 100
Octyl stearate	13.5
Zinc oxide	13.5
Isopropyl myristate	5
Butylene glycol	3
Isohexadecane	3
Titanium dioxide	2
Polyglyceryl-3 oleate	1.75
Cetyl dimethicone copolyol	1.35
Magnesium sulfate	0.75
Sodium chloride	0.75
Aluminium stearate	0.18
Alumina	0.15
Lecithin	0.13
Isopropyl palmitate	0.05
Sodium ascorbyl phosphate	0.15
Morus alba	0.0023
Ginseng	0.003

Method

Stage 1

Into the water, Magnesium sulfate, Sodium chloride and Butylene glycol were added and dispersed. The aqueous phase was then heated to 70^{0}C.

Stage 2

The Octyl stearate, Isopropyl myristate, Isohexadecane, Titanium dioxide, Polyglyceryl-3 oleate, Cetyl dimethicone copolyol, Aluminium stearate, Lecithin and Isopropyl palmitate were mixed and heated to 70^{0}C to melt the waxes.

Stage 3

Using a prop. Stirrer, stage 2 was added to stage 1. Once uniform, the emulsion was transferred to a homogeniser and mixed to generate the viscosity. The emulsion was then cooled to below 35^{0}C using stirring. The remaining materials, including the antioxidant complex were then added and mixed. The product was then made to weight using purified water and was stirred until uniform.

Example 17 – Sun Protection Cream For Sensitive Skin

	%w/w
Aqua	to 100
Octyl stearate	13.5
Zinc oxide	13.5
Isopropyl myristate	5
Butylene glycol	3
Isohexadecane	3
Titanium dioxide	2
Polyglyceryl-3 oleate	1.75
Cetyl dimethicone copolyol	1.35
Magnesium sulfate	0.75
Sodium chloride	0.75
Aluminium stearate	0.18
Alumina	0.15
Lecithin	0.13
Isopropyl palmitate	0.05
Magnesium ascorbyl phosphate	0.15
Morus alba	0.0023
Ginseng	0.003

Method

Stage 1

Into the water, Magnesium sulfate, Sodium chloride and Butylene glycol were added and dispersed. The aqueous phase was then heated to 70°C.

Stage 2

The Octyl stearate, Isopropyl myristate, Isohexadecane, Titanium dioxide, Polyglyceryl-3 oleate, Cetyl dimethicone copolyol, Aluminium stearate, Lecithin and Isopropyl palmitate were mixed and heated to 70°C to melt the waxes.

Stage 3

Using a prop. Stirrer, stage 2 was added to stage 1. Once uniform, the emulsion was transferred to a homogeniser and mixed to generate the viscosity. The emulsion was then cooled to below 35°C using stirring. The remaining materials, including the antioxidant complex were then added and mixed. The product was then made to weight using purified water and was stirred until uniform.

Example 18 – Anti-ageing Foundation

	%w/w
Aqua	to 100
Butylene glycol	9.8
Cetearyl isononanoate	4.9
Dimethicone	3.2
Glycerin	1.96
Silica	1.9
Caprylic/capric triglyceride	1.67
Paraffinum liquidum	1.67
Petrolatum	1.67
Hydrogenated coco-glycerides	1.67
Cetearyl octanoate	1.5
Cetearyl alcohol	1.35
Octyl methoxycinnamate	1.28
Talc	1

Glyceryl stearate	0.95
PEG-100 stearate	0.9
Butyl methoxydibenzoylmethane	0.6
Saccharide isomerate	0.54
Lactic acid	0.45
Sodium polyacrylate	0.45
Boron nitride	0.42
Sodium PCA	0.4
Borago officinalis	0.4
Tocopheryl acetate	0.4
PVP/hexadecene copolymer	0.4
PEG-20 stearate	0.33
Glycolic acid	0.2
Sodium stearoyl lactylate	0.2
Isopropyl myristate	0.17
Polyaminopropyl biguanide	0.16
Tetrasodium EDTA	0.1
Xanthan gum	0.1
Citric acid	0.06
Alcohol denat.	0.04
Lecithin	0.037
Preservative	q.s
Sodium ascorbyl phosphate	1.5
Morus alba	0.023
Ginseng	0.03

Method

Stage 1

Into the water, Citric acid, EDTA and Lactic acid were added and dispersed. Xanthan gum was pre-dispersed in Butylene glycol and was added to the bulk. PVP/hexadecene copolymer was then added and dispersed using a prop. Stirrer. The aqueous phase was then heated to 70^{o}C.

Stage 2

The Cetearyl isononanoate, Dimethicone, Silica, Caprylic/capric triglyceride, Paraffinum liquidum, Petrolatum, Hydrogenated coco-glycerides, Cetearyl octanoate, Cetearyl alcohol, Octyl methoxycinnamate, Talc, Glyceryl stearate, PEG-100 stearate, Butyl methoxydibenzoylmethane, Borago officinalis, Tocopheryl acetate, Sodium stearoyl lactylate, Isopropyl myristate and Lecithinoil phase were mixed and heated to 70^{0}C to melt the waxes.

Stage 3

Using a homogeniser, stage 2 was added to stage 1 and this was mixed until emulsified and uniform. The emulsion was then cooled to below 35^{0}C using stirring. The remaining materials, including the antioxidant complex were then added and mixed. The product was then made to weight using purified water and was stirred until uniform.

Example 19 – Anti-ageing Foundation

	%w/w
Aqua	to 100
Butylene glycol	9.8
Cetearyl isononanoate	4.9
Dimethicone	3.2
Glycerin	1.96
Silica	1.9
Caprylic/capric triglyceride	1.67
Paraffinum liquidum	1.67
Petrolatum	1.67
Hydrogenated coco-glycerides	1.67
Cetearyl octanoate	1.5
Cetearyl alcohol	1.35
Octyl methoxycinnamate	1.28
Talc	1
Glyceryl stearate	0.95

PEG-100 stearate	0.9
Butyl methoxydibenzoylmethane	0.6
Saccharide isomerate	0.54
Lactic acid	0.45
Sodium polyacrylate	0.45
Boron nitride	0.42
Sodium PCA	0.4
Borago officinalis	0.4
Tocopheryl acetate	0.4
PVP/hexadecene copolymer	0.4
PEG-20 stearate	0.33
Glycolic acid	0.2
Sodium stearoyl lactylate	0.2
Isopropyl myristate	0.17
Polyaminopropyl biguanide	0.16
Tetrasodium EDTA	0.1
Xanthan gum	0.1
Citric acid	0.06
Alcohol denat.	0.04
Lecithin	0.037
Preservative	q.s
Magnesium ascorbyl phosphate	1.5
Morus alba	0.023
Ginseng	0.03

Method

Stage 1

Into the water, Citric acid, EDTA and Lactic acid were added and dispersed. Xanthan gum was pre-dispersed in Butylene glycol and was added to the bulk. PVP/hexadecene copolymer was then added and dispersed using a prop. Stirrer. The aqueous phase was then heated to 70^0C.

Stage 2

The Cetearyl isononanoate, Dimethicone, Silica, Caprylic/capric triglyceride, Paraffinum liquidum, Petrolatum, Hydrogenated coco-glycerides, Cetearyl octanoate, Cetearyl alcohol, Octyl methoxycinnamate, Talc, Glyceryl stearate, PEG-100 stearate, Butyl methoxydibenzoylmethane, Borago officinalis, Tocopheryl acetate, Sodium stearoyl lactylate, Isopropyl myristate and Lecithinoil phase were mixed and heated to 70^{0}C to melt the waxes.

Stage 3

Using a homogeniser, stage 2 was added to stage 1 and this was mixed until emulsified and uniform. The emulsion was then cooled to below 35^{0}C using stirring. The remaining materials, including the antioxidant complex were then added and mixed. The product was then made to weight using purified water and was stirred until uniform.

Example 20 – Sun Protection Spray – SPF15

	%w/w
Aqua	to 100
Dicaprylyl maleate	12
Butylene glycol	5
Octyl methoxycinnamate	4
Butyl methoxydibenzoylmethane	3.5
Dimethicone	3
Polyglyceryl-3 methylglucose distearate	3
Acrylates/octylacrylamide copolymer	2
C18-36 acid glycol ester	1.5
Triethanolamine	0.5
Tocopheryl acetate	0.2
Acrylates/vinyl isodecanoate crosspolymer	0.05
Tetrasodium EDTA	0.02
Potassium hydroxide	0.015
Preservative	q.s
Sodium ascorbyl phosphate	0.15

Morus alba	0.0023
Ginseng	0.003

Method

Stage 1

Into the water, EDTA was added and dispersed. Acrylates/octylacrylamide copolymer and Acrylates/vinyl isodecanoate crosspolymer were added and dispersed using a prop. Stirrer. Butylene glycol was added and dispersed. The aqueous phase was then heated to 70^{0}C.

Stage 2

The Dicaprylyl maleate, Octyl methoxycinnamate, Butyl methoxydibenzoylmethane, Dimethicone, Polyglyceryl-3 methylglucose, C18-36 acid glycol ester and Tocopheryl acetate were mixed and heated to 70^{0}C to melt the waxes.

Stage 3

Using a homogeniser, stage 2 was added to stage 1 and this was mixed until emulsified and uniform. The emulsion was then cooled to below 35^{0}C using stirring. The remaining materials, including the antioxidant complex were then added and mixed. The product was then made to weight using purified water and was stirred until uniform.

Example 21 – Sun Protection Spray – SPF15

	%w/w
Aqua	to 100
Dicaprylyl maleate	12
Butylene glycol	5
Octyl methoxycinnamate	4
Butyl methoxydibenzoylmethane	3.5
Dimethicone	3
Polyglyceryl-3 methylglucose distearate	3
Acrylates/octylacrylamide copolymer	2
C18-36 acid glycol ester	1.5

Triethanolamine	0.5
Tocopheryl acetate	0.2
Acrylates/vinyl isodecanoate crosspolymer	0.05
Tetrasodium EDTA	0.02
Potassium hydroxide	0.015
Preservative	q.s
Magnesium ascorbyl phosphate	0.15
Morus alba	0.0023
Ginseng	0.003

Method

Stage 1

Into the water, EDTA was added and dispersed. Acrylates/octylacrylamide copolymer and Acrylates/vinyl isodecanoate crosspolymer were added and dispersed using a prop. Stirrer. Butylene glycol was added and dispersed. The aqueous phase was then heated to 70^{0}C.

Stage 2

The Dicaprylyl maleate, Octyl methoxycinnamate, Butyl methoxydibenzoylmethane, Dimethicone, Polyglyceryl-3 methylglucose, C18-36 acid glycol ester and Tocopheryl acetate were mixed and heated to 70^{0}C to melt the waxes.

Stage 3

Using a homogeniser, stage 2 was added to stage 1 and this was mixed until emulsified and uniform. The emulsion was then cooled to below 35^{0}C using stirring. The remaining materials, including the antioxidant complex were then added and mixed. The product was then made to weight using purified water and was stirred until uniform.

Example 22 – Toner & Cleanser 2 In 1

	%w/w
Alcohol denat.	48
Aqua	to 100
PEG-8	6
Glycerin	2
Propylene glycol	0.5
Sodium C8-16 isoalkylsuccinyl lactoglobulin sulfonate	0.02
Laminaria saccharina	0.01
Hamamelis virginiana	0.006
Citrullus vulgaris	0.001
Preservative	q.s
Sodium ascorbyl phosphate	1.5
Morus alba	0.023
Ginseng	0.03

Method

Stage 1

Into the water, Alchol denat. Was added and dispersed until uniform. Using a prop. Stirrer, all materials including the antioxidant complex, were slowly added and stirred until uniform. The product was made to weight using Purified water and stirred until uniform.

Example 23 – Toner & Cleanser 2 In 1

	%w/w
Alcohol denat.	48
Aqua	to 100
PEG-8	6
Glycerin	2
Propylene glycol	0.5
Sodium C8-16 isoalkylsuccinyl lactoglobulin sulfonate	0.02

Laminaria saccharina	0.01
Hamamelis virginiana	0.006
Citrullus vulgaris	0.001
Preservative	q.s
Magnesium ascorbyl phosphate	1.5
Morus alba	0.023
Ginseng	0.03

Method

Stage 1

Into the water, Alchol denat. Was added and dispersed until uniform. Using a prop. Stirrer, all materials including the antioxidant complex, were slowly added and stirred until uniform. The product was made to weight using Purified water and stirred until uniform.

Example 24 – Skin pH Balancing Toner

	%w/w
Aqua	to 100Alcohol denat.
7.9	
Butylene glycol	2
Dimethicone copolyol	1.5
Sodium lactate	0.6
Glycerin	0.5
Allantoin	0.1
Propylene glycol	0.1
Lactic acid	0.002
Preservative	q.s
Sodium ascorbyl phosphate	1.5
Morus alba	0.023
Ginseng	0.03

Method

Stage 1

Into the water, Lactic acid and Alcohol denat were separately added and dispersed until uniform. Using a prop. Stirrer, all materials including the antioxidant complex, were slowly added and stirred until uniform. The product was made to weight using Purified water and stirred until uniform.

Example 25 – Skin pH Balancing Toner

	%w/w
Aqua	to 100
Alcohol denat.	7.9
Butylene glycol	2
Dimethicone copolyol	1.5
Sodium lactate	0.6
Glycerin	0.5
Allantoin	0.1
Propylene glycol	0.1
Lactic acid	0.002
Preservative	q.s
Magnesium ascorbyl phosphate	1.5
Morus alba	0.023
Ginseng	0.03

Method

Stage 1

Into the water, Lactic acid and Alchol denat were separately added and dispersed until uniform. Using a prop. Stirrer, all materials including the antioxidant complex, were slowly added and stirred until uniform. The product was made to weight using Purified water and stirred until uniform.

Example 26 pH Balanced Cleansing Lotion

	%w/w
Aqua	to 100
Paraffinum liquidum	14
Isopropyl palmitate	7
Glyceryl stearate	2.5
PEG-100 stearate	2.5
Butylene glycol	2
Hydrogenated vegetable glycerides citrate	2
Polysorbate 60	0.5
Sorbitan stearate	0.5
Persea gratissima	0.3
Prunus persica	0.3
Propylene glycol	0.3
Acrylates/C10-30 alkyl acrylate crosspolymer	0.12
Potassium hydroxide	0.05
Tetrasodium EDTA	0.02
Medicago sativa	0.0045
Preservative	q.s
Sodium ascorbyl phosphate	1.5
Morus alba	0.023
Ginseng	0.03

Method

Stage 1

Into the water, EDTA was added and dispersed. Butylene glycol was then added and dispersed. The aqueous phase was then heated to 70^{0}C.

Stage 2

The Paraffinum liquidum, Isopropyl palmitate, Glyceryl stearate, PEG-100 stearate, Hydrogenated vegetable glycerides citrate, Polysorbate 60 and Sorbitan stearate were mixed and heated to 70^{0}C to melt the waxes.

Stage 3

Using a homogeniser, stage 2 was added to stage 1 and this was mixed until emulsified and uniform. The emulsion was then cooled to below 35^{0}C using stirring. The remaining materials, including the antioxidant complex were then added and mixed. The product was then made to weight using purified water and was stirred until uniform.

Example 27 pH Balanced Cleansing Lotion

	%w/w
Aqua	to 100
Paraffinum liquidum	14
Isopropyl palmitate	7
Glyceryl stearate	2.5
PEG-100 stearate	2.5
Butylene glycol	2
Hydrogenated vegetable glycerides citrate	2
Polysorbate 60	0.5
Sorbitan stearate	0.5
Persea gratissima	0.3
Prunus persica	0.3
Propylene glycol	0.3
Acrylates/C10-30 alkyl acrylate crosspolymer	0.12
Potassium hydroxide	0.05
Tetrasodium EDTA	0.02
Medicago sativa	0.0045
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A number of trials were conducted to demonstrate the efficacy of the synergistic combinations of antixidant agents.

In Vitro Tests

The following procedure tests the ability of antioxidants to protect lipids from the damaging effects of UV light. The antioxidants to be tested are morus alba ("Mulberry Concentrate" from Aston Chemicals), magnesium ascorbyl phosphate and panax ginseng ("Ginseng 1.1 extract 4294" from S.Black Ltd). The antioxidants were tested individually at a particular concentration and in combination. In the test the antioxidant or combination of antioxidants is mixed with a known skin lipid (linoleic acid) and irradiated using UV light. The quantity of peroxides in each sample was measured colourimetrically after irradiation to assess the level of damage caused by peroxidation of the linoleic acid.

A 1% lipid stock solution was prepared dissolving linoleic acid in an aqueous solution of octoxynol-9 (Triton X-100). Stock solutions in aqueous TBS buffer of the following antioxidants magnesium ascorbyl phosphate, morus alba and panax ginseng were prepared at 15%, 1.0% and 1.0% respectively. In

experiments where the antioxidants were tested individually, 25µl of the lipid stock was vortexed in an ependorf together with 5µl of the antioxidant solution and 20µl of Triton X~100 (mixture of water and detergent used to dissolve the lipid). In experiments where the antioxidants were tested in combination, 25µl of the lipid stock was vortexed in an ependorf together with 5µl of each of the antioxidant solutions and 10µl of Triton X100. The final concentration of the lipid was 0.5% and of the antioxidants was 1.5%, 0.1% and 0.1% respectively. The control sample used in the experiment was a combination of 25µl of the lipid stock solution and 25µl of TritonX100 and water. This solution contains no antioxidants. Samples of this control were taken before irradiation to act as untreated controls

Using a micropipette plate 7.5µl of each sample was pipetted into 3 wells, i.e. in triplicate, and irradiated with UV light for 40 minutes. After irradiation an assay called the lipid peroxidation assay was carried out. . This determines the amount of peroxides in each well. The reaction that occurs causes a colour change from colourless to blue which is measured colourimetrically at 675nm. The more peroxides present the darker the blue colouration and the higher the observed absorbance.

The results showed that the amount of peroxidation present in the samples treated with the antioxidants individually was similar to that observed when no antioxidants were present whereas no peroxidation was observed when the combination of antioxidants was used. The results are shown in Table 1 below. The final column shows the percentage of peroxidation observed when compared to that seem with the irradiated controls.

Table 1

UV minutes	Antioxidant	Concentration	Absorbance	
0			0	0
40			0.7367	100
40	Magnesium ascorbyl phosphate	1.50%	0.84	>100
40	Panax ginseng	0.10%	0.838	>100
40	Morus alba	0.10%	0.833	>100
40	Combination	1.70%	-0.119	0

No protection was seen when using the antioxidants on their own, however when in combination we see a maximum effect i.e. complete lipid protection. This is greater than the additive effect of each individual antioxidant indicating a synergistic relationship between them.

In Vivo Tests

Test formulations containing antioxidants and control formulations containing no antioxidants were applied to the skin of the forearm of volunteers. An adhesive disc was applied to the skin to sample skin cells and the disc was then irradiated with broad spectrum UVA/B to induce oxidation of the lipid. Following extraction of the lipid into methanol, the degree of lipid hydroperoxides (free radical generated damage) formed were measured colourimetrically. The degree of protection afforded by the antioxidants was thus measured and compared to unirradiated and irradiated controls.

Claims

1) A cosmetic formulation for application to the skin comprising a synergistic mixture of two or more antioxidant agents in combination with a cosmetically acceptable diluent or carrier.

2) A cosmetic formulation as claimed in claim 1 comprising a synergistic mixture of three antioxidant agents.

3) A cosmetic formulation as claimed in claim 2 wherein the synergistic mixture comprises:-

A) origanum vulgare, sodium ascorbyl phosphate and one of morus alba or panax ginseng,

B) panax ginseng, morus alba, and one of magnesium ascorbyl phosphate, sodium ascorbyl phosphate or camellia sinensis,

C) origanum vulgare, panax ginseng and one of rosmarinus officinalis or ascorbyl palmitate,

D) origanum vulgare, morus alba and one of rosmarrinus officinalis or magnesium ascorbyl phosphate,

E) camellia sinensis, magnesium ascorbyl phosphate and panax ginseng or

F) Tocopheryl acetate, gingko biloba and one of panax ginseng or morus alba.